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EXAMINER	
STERRETT, JONATHAN G	

ART UNIT	PAPER NUMBER
3623	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/716,476	PANDIT, RAM	
	Examiner	Art Unit	
	JONATHAN G. STERRETT	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 July 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) *11-13,24-26 and 37-39* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,14-23 and 27-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5-26-04, 6-7-04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Summary

1. This **Non-Final Rejection** is responsive to the election of 18 July 2008. This election elected **Claims 1–10, 14-23 and 27-36**. **Claims 11, 24 and 37 and 12, 25 and 38** are withdrawn. The examiner notes that this election was made without traverse.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-10, 27-36 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 1 is rejected under 35 U.S.C. 101 based on Supreme Court precedent, and recent Federal Circuit decisions, the Office's guidance to examiners is that a § 101 process must (1) be tied to another statutory class (such as a particular apparatus) or (2) transform underlying subject matter (such as an article or materials) to a different state or thing. Diamond v. Diehr, 450 U.S. 175, 184 (1981); Parker v. Flook, 437 U.S. 584, 588 n.9 (1978); Gottschalk v. Benson, 409 U.S. 63, 70 (1972); Cochrane v. Deener, 94 U.S. 780,787-88 (1876).

An example of a method claim that would not qualify as a statutory process would be a claim that recited purely mental steps. Thus, to qualify as a § 101 statutory process, the claim should positively recite the other statutory class (the thing or product) to which it is tied, for example by identifying the apparatus that accomplishes the method steps, or positively recite the subject matter that is being transformed, for example by identifying the material that is being changed to a different state.

Here, applicant's method steps, fail the first prong of the new Federal Circuit decision since they are not tied to another statutory class and can be performed without the use of a particular apparatus. Thus, **Claim 1** is non-statutory since it may be performed within the human mind.

Additionally, **Claim 27** is nonstatutory because the instructions claimed are not embodied on computer-readable (or machine readable) medium and thus are software per se. Software per se is printed matter and not statutory under 35 USC 101. (Furthermore, the examiner notes that the applicant must amend the claims such that the specific kind of computer readable medium is claimed, because the specification on page 20 notes that computer readable medium includes a carrier wave. Software on a carrier wave is not a statutory class and is not patentable under 35 USC 101.)

Claims 2-10 and 28-36 depend on **Claims 1 and 27** respectively and are therefore not statutory at least for the reasons given above for **Claims 1 and 27**.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1-10, 14-23 and 27-36** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Thompson**, Paul; Psaraftis, Harilaos; "Cyclic Transfer algorithms for multivehicle routing and scheduling problems", Sept-Oct 1993, Operations Research, vol. 41, No. 5, pp.935-946. (hereinafter **Thompson**).

Thompson teaches the utilization of various algorithms and techniques to solve vehicle routing problems. The general approaches outlined by Thompson involves taking into account various criteria to most efficiently schedule vehicles on a logistics network where the solution space is mathematically complex. Thompson's discussion involves how various ways of applying cyclical transfers can be used to heuristically optimize a network. While it is not readily clear or apparent that the various techniques suggested by Thompson were used in one embodiment, it is the examiner's position that one of ordinary skill in the art of Operations Research (OR) and logistics would combine the approaches and techniques to teach the claim limitations as outlined below.

Regarding **Claim 1**, Thompson teaches:

A method for optimizing a tour having a first segment with an origination point and a destination point and a second segment with an origination point and a destination point, comprising:

page 935, Thompson addresses vehicle routing and scheduling problems where the segments the vehicles traverse have an origin and a destination point (see Figure 1).

receiving first load data about a first load and second load data about a second load;

page 936 column 1, the transportation network being modeled has demands that are shifted between routes (i.e. a first load and a second load – demands).

evaluating a fit of the first load data on the first segment and a fit of the second load data on the first segment;

evaluating a fit of the first load data on the second segment and a fit of the second load data on the second segment;

page 936 column 1 bottom para, the cyclic transfer method evaluates the loads placed on both routes.

ranking the relative fits of the first load data and the second load data against the first segment on a first segment list;

ranking the relative fits of the first load data and the second load data against the second segment on a second segment list;

page 936 column 2 bottom ara, the evaluation of the members of the neighborhood to determine that no other load has a better objective function value is ranking the relative fits of the various loads on neighboring segments (i.e. a first and a second).

assigning the load having the highest ranking fit from the first segment list to the first segment and removing that load from the second segment list; and

assigning the load having the highest ranking fit from the second segment list to the second segment.

Figure 1 on page 936 shows the assignment of a various loads (i.e. including a first and a second) from a first route to a second route (ie. from a first list to a second list).

Thompson's teachings imply that there is a list since on page 936 bottom paragraph Thompson mentions "all cyclic transfers" in terms of adjusting loads to minimize the objective function. however, Thompson does not explicitly show a first list and a second list, however, since Thompson does teach (see again page 936 column 1 middle paragraph the mathematics of mapping the various demands onto dummy routes to find the best fit) a set of demands and a set of possible routes, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Thompson's teachings regarding mapping loads onto dummy routes to include showing at least two lists of the possible combinations to be optimized, because it is old and well known in the art that groups of routes (i.e. segments) may be shown as lists.

Furthermore, the use a having two lists (Thompson suggests more than two possible combinations to optimize towards, because Thompson teaches looking at the different possible combinations, i.e. many lists, in a neighborhood) would at least have been obvious to try, because Thompson teaches optimizing the objective function in a neighborhood of solutions.

Regarding **Claim 2** Thompson teaches:

wherein evaluating the fit of the first load data further comprises evaluating key parameters of the first load data, wherein the key parameters include one or more of a time criteria, a distance criteria, and a savings criteria.

Page 936, the objective function being optimizes implies a cost function optimizing, i.e. a savings criteria.

Regarding **Claim 3** Thompson teaches

checking a latest ready delivery date of the first load data against the first segment's estimated end date; and if the latest ready delivery date is greater than the estimated end date, setting the first load as unfit for assignment to the first segment.

Page 937 column 2, Thompson suggests that the approach minimizes tardiness (i.e. implying that there is a time window by which the load must be delivered).

Regarding **Claim 4** Thompson teaches:

wherein evaluating the fit of the first load data further comprises: checking a latest load ready date of the first load data against the first segment's estimated start date; and if the latest load ready date is less than the estimated start date, setting the first load as unfit for assignment to the first segment.

Page 938 VRPSPTW (Vehicle Routing Problems with Time Windows) algorithms suggest to one of ordinary skill in the OR art that time windows (i.e. for pickup and delivery) are criteria that can be evaluated against. It would have been obvious to one of ordinary skill in the art to set as a criteria for optimizing, according to the cyclic transfer approach of Thompson, that loads have a pickup window time (i.e. a latest load ready date against a first segment's start date) because Thompson shows that VRPSPTW problems can be solved using a cyclic transfer approach.

Regarding **Claim 5** Thompson teaches:

wherein the distance criteria include one or more of a segment deadhead criteria, load deadhead criteria, and tour mileage criteria.

Page 936 Figure 1, the illustration of Figure 1 and moreso, the discussion of "arcs" on page 937 column 1 para 1-2, where the cost minimizing aspects of the arcs suggest that, at least, tour mileage is a criteria to be minimized.

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Regarding **Claim 6** Thompson teaches and suggests minimizing distance traveled and evaluating the fit of loads on segments as per a cost criteria, as discussed above, however Thompson does not teach where the computing involves computing the

resulting deadhead from assigning a load to a first segment. However, Official Notice is taken that deadheads are known in the art of logistics as resulting from carrying loads to a destination and having a potential empty transport on the return (i.e. the deadhead). Since Thompson teaches comparing a criteria to determine if a load should go on a segment, it would have been obvious to one of ordinary skill in the art to include accounting for deadheads in the optimization approach of Thompson, because it would have provided a predictable result in deadhead segments of a transportation route.

Regarding **Claim 7** Thompson teaches and suggests minimizing distance traveled and evaluating the fit of loads on segments as per a cost criteria, as discussed above. Thompson further teaches setting a route optimization scheme which minimizes the total distance (see page 943 column 1 para 1 and Table V "Mean Route Distance" suggests minimizing the total route time.

As noted above for Claim 6, Thompson does not teach where the total deadhead is measure as part of the cost minimization function, however the concept of measuring a deadhead route is old and well known in the art of logistics and would have provided a predictable result in combination with the concept of minimizing total distance as taught by Thompson. Therefore it would have been obvious to modify Thompson by one of ordinary skill in the art at the time of the invention to include setting a cost criteria which measures total deadhead amount as a criteria for computing a cyclic transfer in optimizing a logistics network, because it would have provided a predictable result in accounting for vehicle deadhead distance in optimizing a logistics network.

Regarding **Claim 8**, Thompson teaches

computing the total tour mileage that would result from assigning the first load to the first segment; and if the computed total tour mileage is greater than the tour mileage criteria, setting the first load as unfit for assignment to the first segment.

Page 941 column 1, para 1 under section 4.1; The minimum set of total distance is the objective function against which cyclical transfers are evaluated.

Regarding **Claim 9**, Thompson teaches

determining a savings criteria for the first load data against the first segment.

. page 936 column 1 bottom para's – the impact to the objective function as a result of evaluating individual cyclical transfers is measured as a cost (i.e. a savings criteria).

Regarding **Claim 10**, Thompson teaches the cyclical transfer approach which minimizes the incremental costs associated with switching demand (i.e. loads) from one segment to another. Thompson teaches that this approach evaluates the cost associated with shipping a load on various segments. Thompson does not teach where the cost associated with shipping a load on a segment is evaluated against using a common carrier to ship the load versus a particular segment. However, Official Notice

is taken that using common carriers to ship loads (e.g. LTL carriers) is old and well known in the art where it is further known that these common carriers incur costs associated with shipping a load on a particular route.

It would have been further obvious to one of ordinary skill in the art to modify Thompon's cyclical transfer approach to include evaluating the incremental cost of using a common carrier versus the dedicated cost of shipping a load on a particular segment, because it would have provided a predictable output in further evaluating the use of common carriers versus dedicated to service a logistics network.

Claims 14-23 and 27-36 recite similar limitations to those addressed by the rejection of **Claims 1-10** above, and are therefore rejected under the same rationale.

Furthermore regarding **Claims 14-23 and 27-36** Thompson suggests using software and a computer (including a processor) – see page 943 column 1 para 2 and Table V ("Mean CPU Time").

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Thompson, Paul; Orlin, James B; "The Theory of Cyclic Transfers", August 1989, Massachusetts Institute of Technology Working Paper, pp.1-45.

Christiansen, Marielle; Nygreen, Bjoern; "A method for solving ship routing problems with inventory constraints", 1998, Annuals of Operations Research, pp.357-358.

Braysy, Olli; Gendreau, Michel; "Route Construction and Local Search Algorithms for the Vehicle Routing Problem with Time Windows", Report No. STF42 A01024, 18 December 2001, SINTEF Applied Mathematics, pp.1-28

Labiad, Noureddine; "Scheduling and Routing of Vehicles for a Transportation Company", NC State Masters Thesis, 2002, pp.1-39. (The examiner notes that this paper discusses algorithms to reduce the deadhead miles associated with solving vehicle scheduling and routing problems).

US 5890134 by Fox teaches a scheduling optimizer.

US 6891897 by Bevan teaches a method for scheduling using matrices for wireless channel communication.

US 6920366 by Luh teaches an algorithm for efficient supply chain planning.

US 6940824 by Shibutani teaches a method for assignment using a table base algorithm.

US 7139721 by Borders teaches a method of scheduling deliveries.

US 7251612 by Parker teaches a method for scheduling distribution timeslots and routes.

US 7295990 by Braunmoeller teaches a method for order planning based on estimated orders.

US 20040030428 by Compton teaches a method for scheduling supply chain processes.

US 20070039001 by Briccarello teaches a method for tuning a scheduling process.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan G. Sterrett whose telephone number is 571-272-6881. The examiner can normally be reached on 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Beth Boswell can be reached on 571-272-6737. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JGS 9-24-2008

/Jonathan G. Sterrett/

Primary Examiner, Art Unit 3623